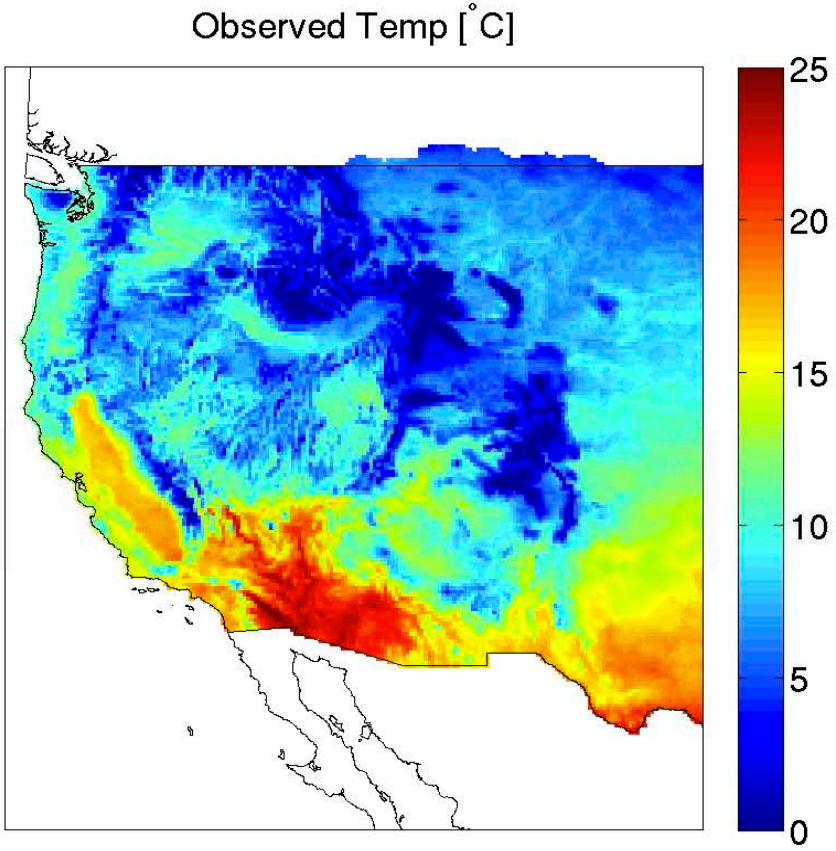
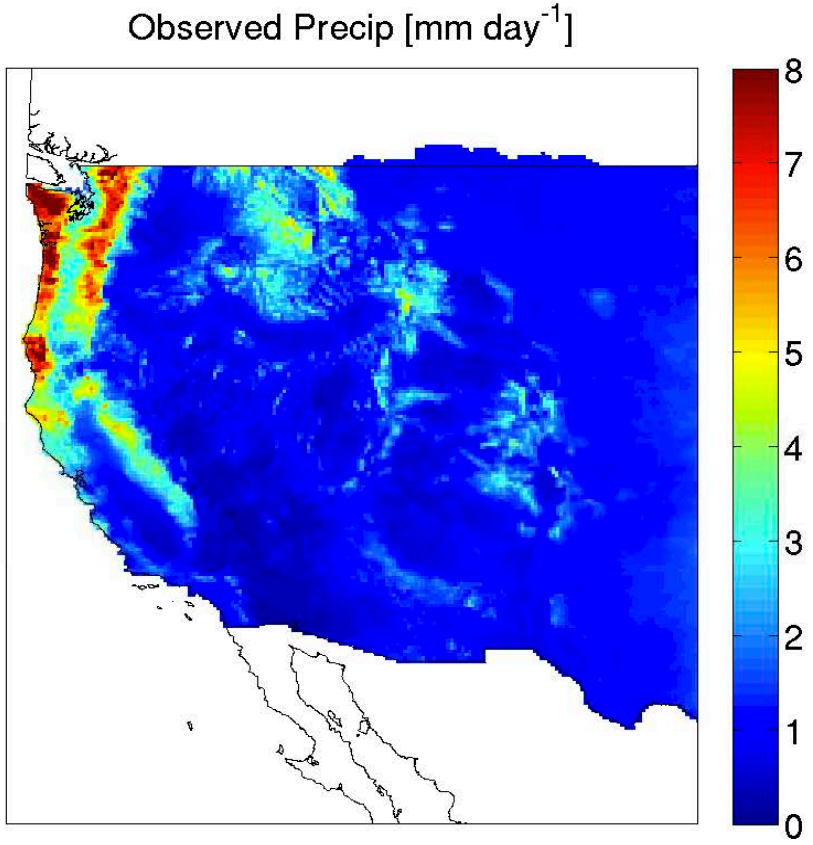
Climate Change Impacts on Water Resources and Irrigated Agriculture in the Central Valley of California

- Improve the representation of crops in a hydrologic model by coupling the Decision Support System for Agrotechnology Transfer Model (DSSAT) to the Water Evaluation and Planning System (WEAP)
- Simulate current and future available water throughout the Central Valley and distributions of that water among competing uses
- Assess the impacts of future water availability on crop evapotranspiration and yields in irrigated agricultural areas
- Evaluate water resources across the broader western US using a continental-scale hydrologic model

Climate

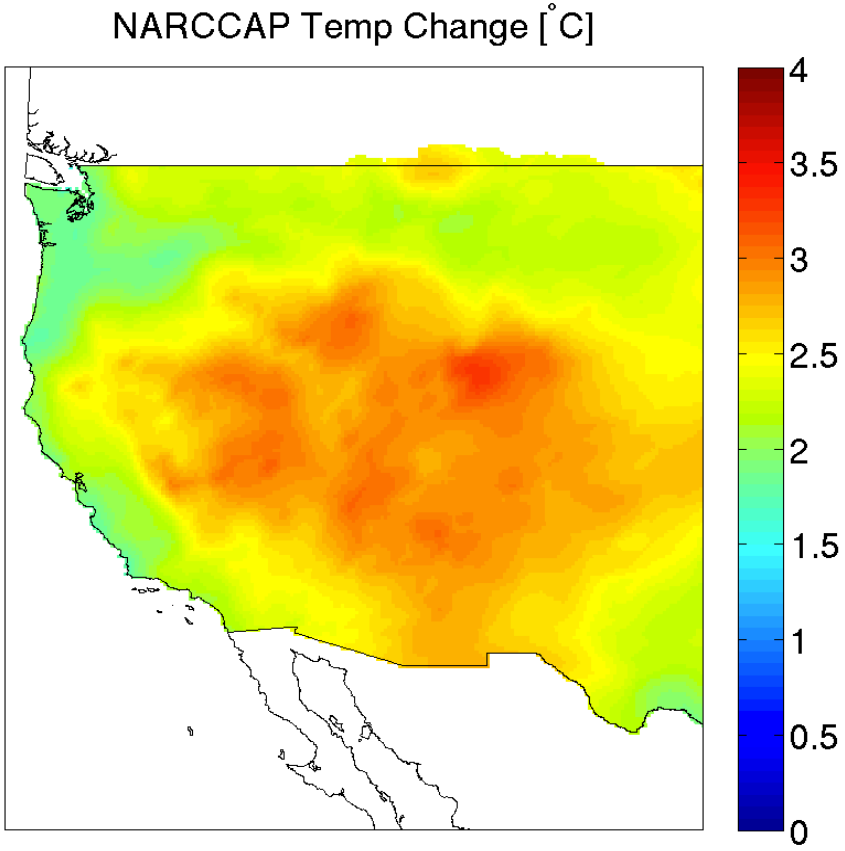
- Surface temperature and precipitation observations for 1980-2009, and 1998-2009 TRMM observations

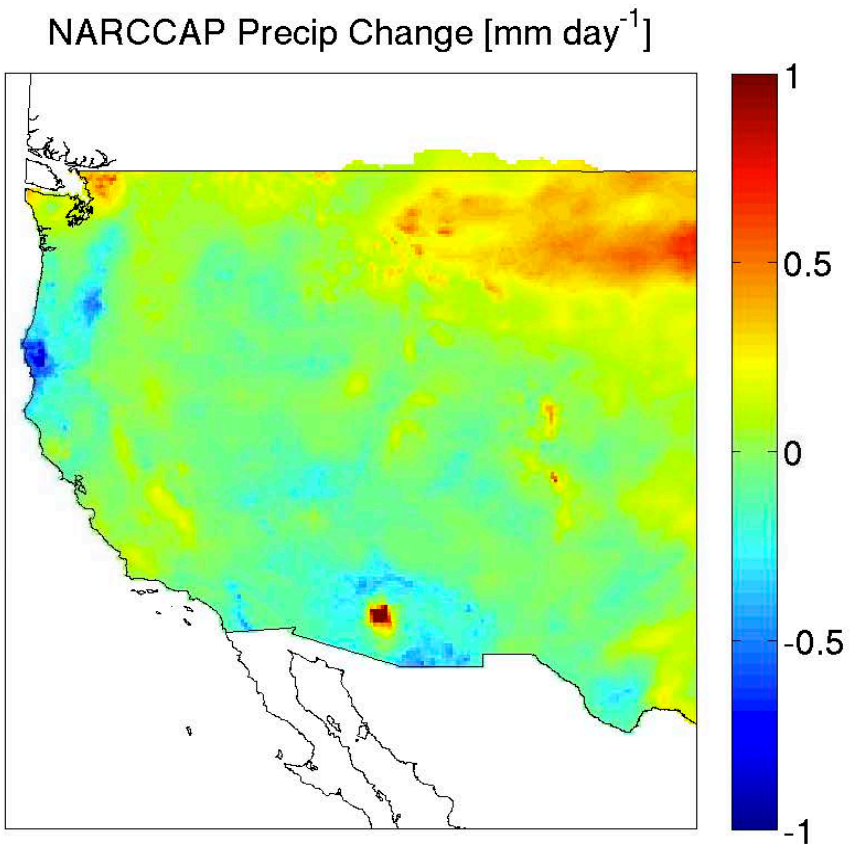




Climate Change

- Difference between NARCCAP 2050-2069 and NARCCAP 1980-1999 temperature and precipitation





Water Resources and Crops

- Water Evaluation and Planning System (WEAP) coupled to the Decision Support System for Agrotechnology Transfer Model (DSSAT)
- WEAP with the default crop coefficient (Kc) approach

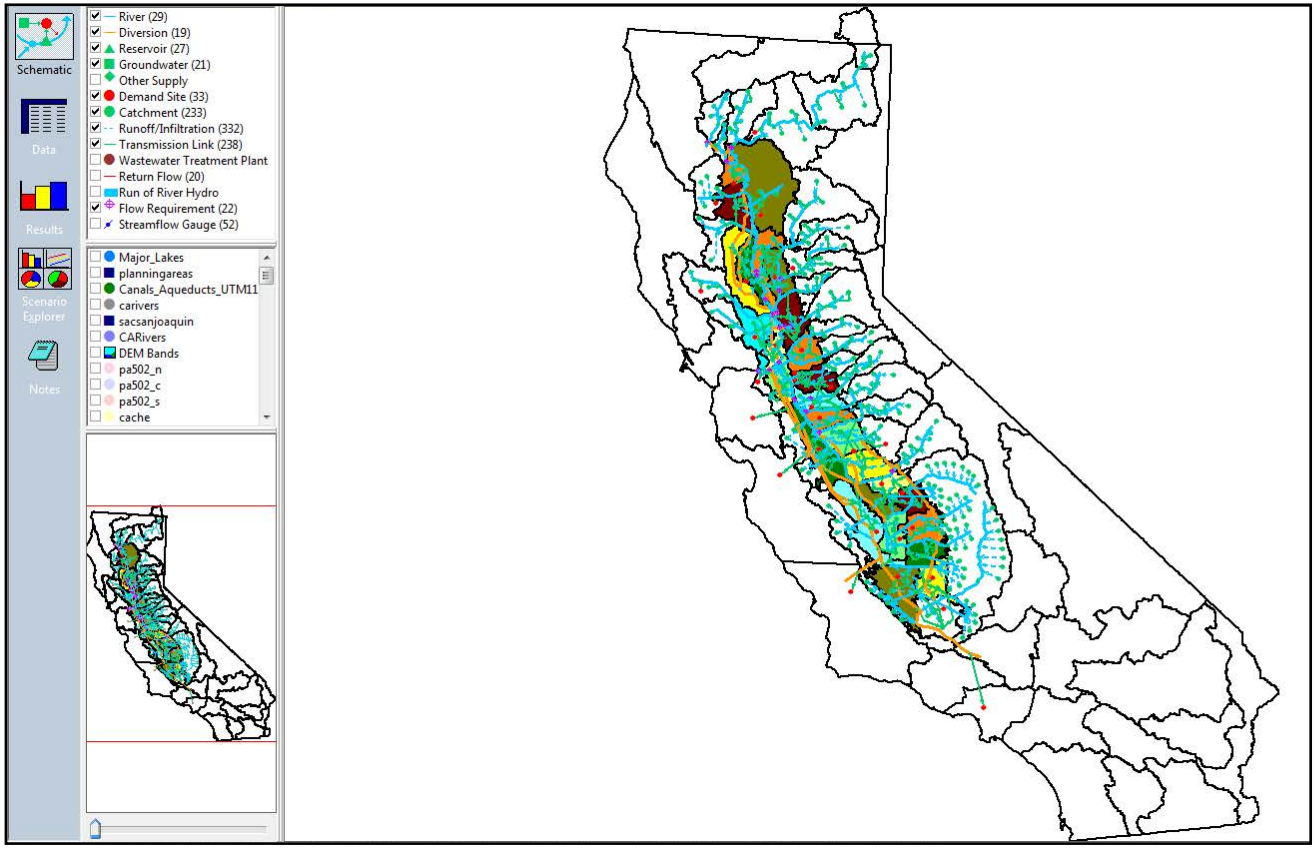
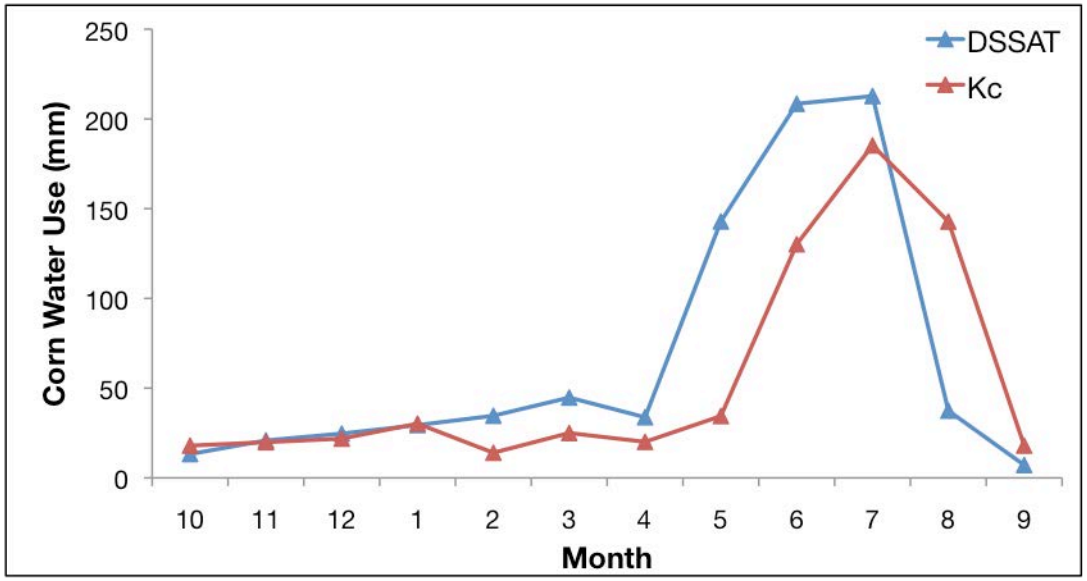
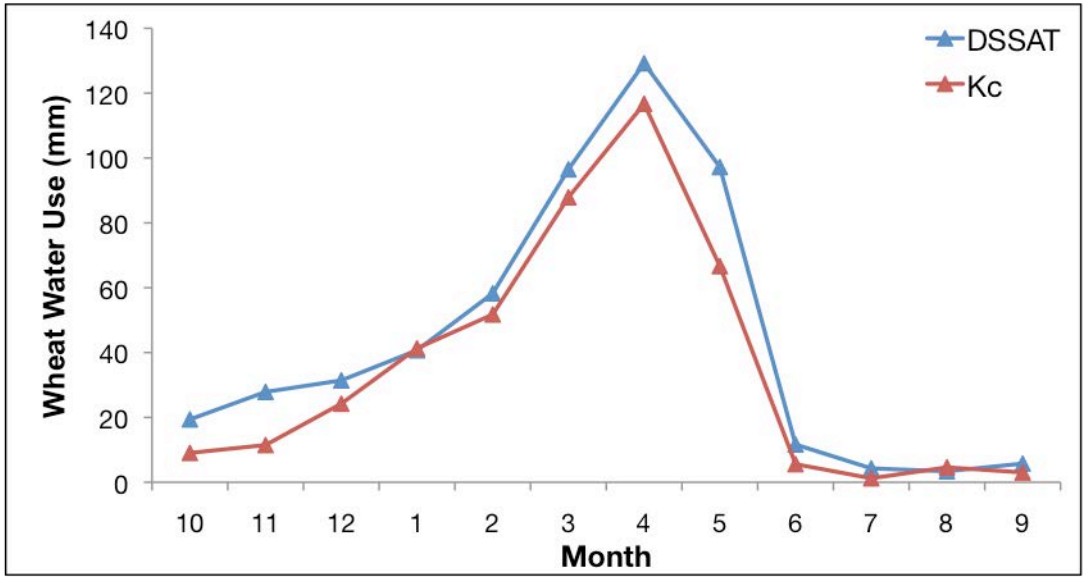


Figure Captions

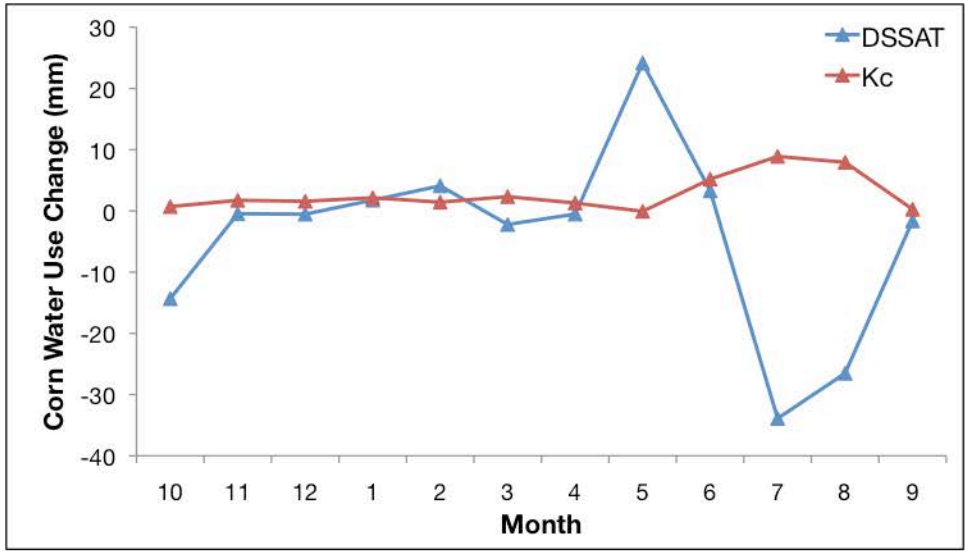
- Slide 6. Seasonal cycles of water use simulated by WEAP-DSSAT and WEAP-Kc for corn (top) and winter wheat (bottom) in the Central Valley for 1980-2009
- Slide 7. Difference in the seasonal cycles of water use for corn (top left) and winter wheat (bottom left), and average water use (right), between 2050-2069 and 1980-1999 simulated by WEAP-DSSAT and WEAP-Kc across the Central Valley
- Slide 8. Difference in average yields between 2050-2069 and 1980-1999 simulated by WEAP-DSSAT for corn (left) and wheat (right); note results are preliminary and scales are not consistent

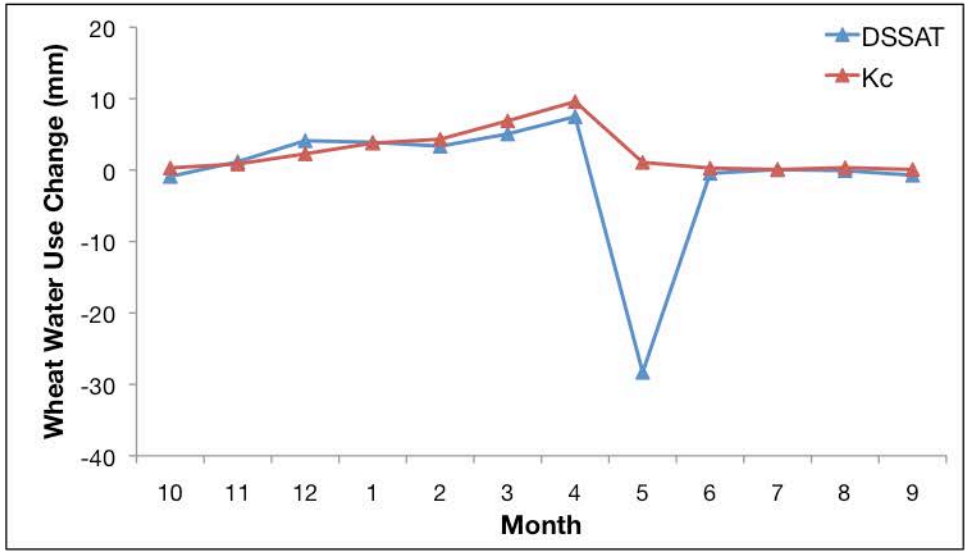
Crop Water Use

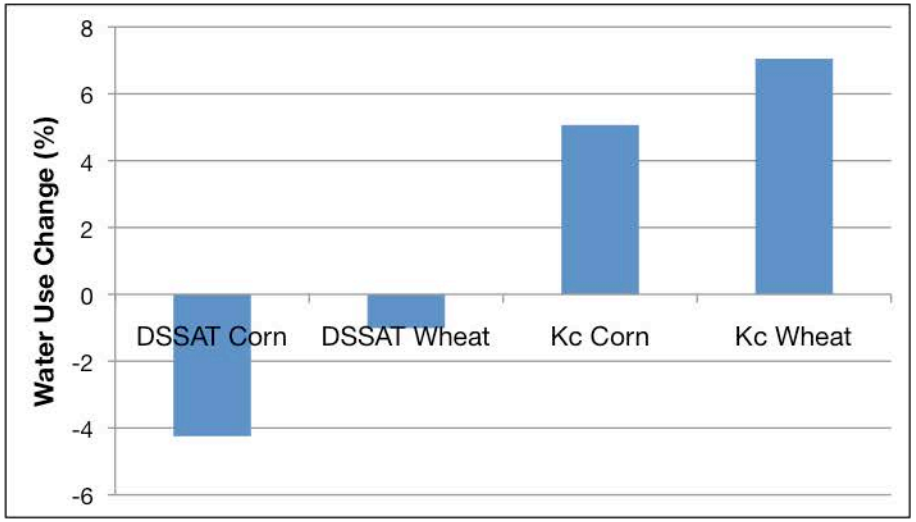




Crop Water Use Change

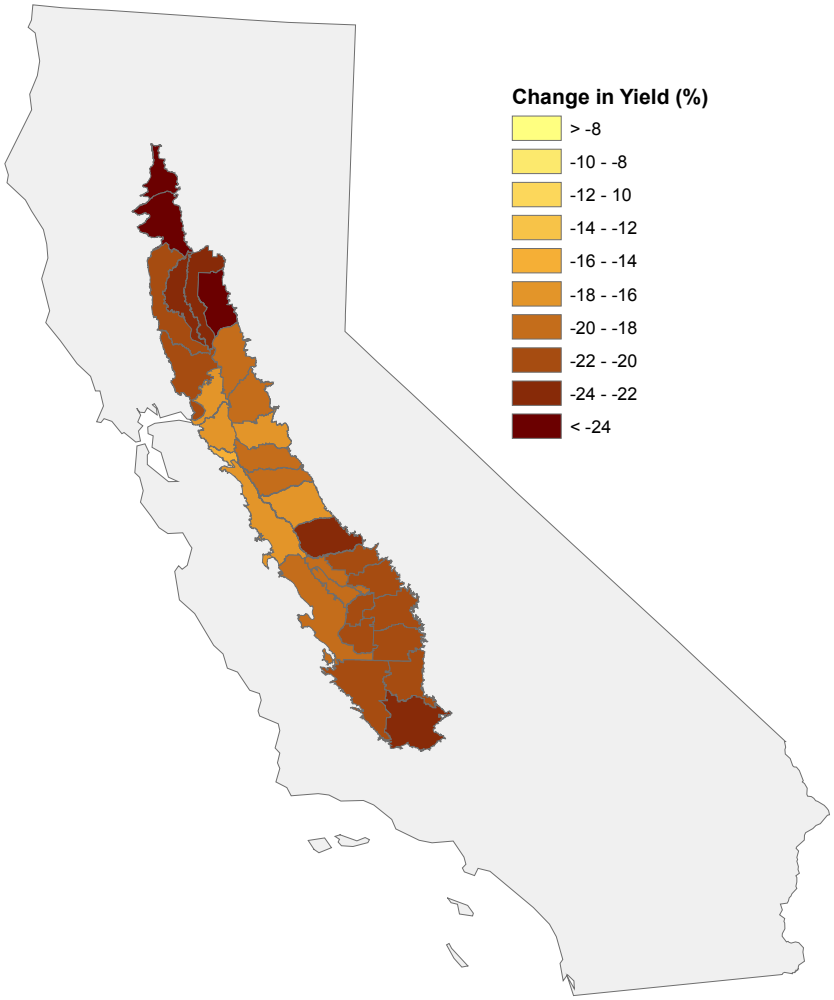






Yield Changes

Corn



Wheat